

Claims

1. Method for transparently exchanging data packets with a packet-oriented network (LAN), via which a number of network 5 elements (PC1, PC2, PC3) and a network node device (ROU) are connected, whereby

- the network elements (PC1, PC2, PC3) are allocated unique addresses (A1, A2, A3) only within the network (LAN),
- the network node device (ROU) connects the packet-oriented 10 network (LAN) to an external device (H), and
- the network node device (ROU) performs an address conversion of the address (A1, A2, A3) of a network element (PC1, PC2, PC3), said address having been allocated in the packet-oriented network (LAN), into an address valid for the 15 external device (H),

comprising the following stages:

- a connection is set up between a first network element (PC1) and the external device (H),
- message header entries of the data packets exchanged between 20 the external device (H) and the first network element (PC1) are verified,
- if an entry is detected that characterizes an expanded packet-oriented protocol, a temporarily transparent connection (TC) is established between the first network element (PC1) and the external device (H), whereby the 25 address (A1) allocated to the first network element (PC1) is transferred to the external device (H) without address conversion.

30 2. Method according to Claim 1,
characterized in that
the address (A1) of the first network element (PC1) is
allocated by the external device when the connection is set up
between the first network element (PC1) and the external

device (H).

3. Method according one of Claims 1 or 2,

characterized in that

5 a modulation/demodulation device (MOD) is disposed between the external device (H) and the network node device (ROU).

4. Method according one of the above claims, characterized in that

10 a verification is carried out before the transparent connection (TC) for the first network element (PC1) is set up, to determine whether a connection of the same type already exists for at least one other network element (PC2, PC3) or for the network node device (ROU).

15

5. Method according one of the above claims, characterized in that

a maximum number of transparent connections (TC) may be defined depending on the specifications of the external device

20 (H).

6. Method according to Claim 5,

characterized in that

the establishment of the transparent connection (TC) of the

25 first network element (PC1) is rejected.

7. Method according to Claim 5,

characterized in that

an existing connection to a network element (PC2) is canceled

30 and the transparent connection (TC) of the further network element (PC1) is then established.

8. Method according one of the above claims, characterized in that

an existing transparent connection (TC) is terminated as soon as a connection release request is detected.

9. Method according to Claim 8,

5 characterized in that

the connection release request is triggered when a predefined period, during which no data packets have been exchanged according to the expanded packet-oriented protocol, has been exceeded.

10

10. Method according one of the above claims, characterized in that

the communication of the network elements (PC1, PC2, PC3) with one another and/or with the network node device (ROU) is

15 alternatively effected either according to the Internet

protocol or according to the PPPoE communication protocol.

11. Network node element (ROU) for supporting a transparent exchange of data packets, comprising

20 - at least one network interface (IF1) to a packet-oriented network (LAN) connecting a number of network elements (PC1, PC2, PC3), whereby said network elements (PC1, PC2, PC3) are allocated unique addresses (A1, A2, A3) only within the network (LAN),

25 - at least one network interface (IF2) to an external device (H),

- at least one routing unit (IPR) for performing an address conversion of the address (A1, A2, A3) of a network element (PC1, PC2, PC3) - said address having been allocated in the 30 packet-oriented network (LAN) - into an address valid for the external device (H),

- at least one monitoring unit (MON) for monitoring message header entries of the data packets exchanged between the external device (H) and a first network element (PC1),

whereby - if an entry is detected that characterizes an expanded packet-oriented protocol - a temporarily transparent connection (TC) is established between the first network element (PC1) and the external device (H), and no address conversion of the address (A1) allocated to the first network element (PC1) by the external device (H) for the duration of the transparent connection (TC) is performed to the external device (H).

5 10 12. Network node element (ROU) according to Claim 11,
characterized in that
the network node element (ROU) is configured as a router.

15 13. Network node element (ROU) according to Claim 11 or 12,
characterized in that
the monitoring unit (MON) controls at least one bridging
device (BDP1, BDP2).